

INDUCTOR CURRENT EMULATION CIRCUIT FOR SWITCHING POWER SUPPLY

ABSTRACT OF THE DISCLOSURE

An inductor current emulation circuit for a switched-mode power supply (SMPS) which is arranged such that its inductor current (I_L) goes to zero at least once per switching cycle. The emulation circuit includes an RC integrator connected in parallel across the inductor, and a zero reset switch (ZRS) connected in parallel across the integrator's capacitor. A control circuit operates the ZRS such that it is opened when I_L is non-zero, and is closed for a least a portion of the time during each switching cycle when I_L is zero such that the capacitor is substantially discharged. In this way, the ZRS essentially recalibrates the emulation circuit when I_L is zero. When so arranged, the voltage (V_C) across the capacitor emulates I_L .

The invention may be implemented with either a discontinuous-inductor-current SMPS, or a continuous-bipolar-inductor-current SMPS.